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EXAMINER

WONG, ALLEN C

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**BEFORE THE BOARD OF PATENT APPEALS
AND INTERFERENCES**

Paper No. 30

Application Number: 09/210,775
Filing Date: December 14, 1998
Appellant(s): SHIMADA ET AL.

Michael R. Cammarata
For Appellant

EXAMINER'S ANSWER

This is in response to the appeal brief filed 11/21/03.

(1) Real Party in Interest

A statement identifying the real party in interest is contained in the brief.

(2) Related Appeals and Interferences

A statement identifying the related appeals and interferences which will directly affect or be directly affected by or have a bearing on the decision in the pending appeal is contained in the brief.

(3) Status of Claims

The statement of the status of the claims contained in the brief is correct.

(4) Status of Amendments After Final

The appellant's statement of the status of amendments after final rejection contained in the brief is correct.

Also, the Information Disclosure Statement filed on 6/12/03 has been considered by the examiner and noted in the case. A copy of the considered IDS filed on 6/12/03 is sent to the applicant.

(5) Summary of Invention

The summary of invention contained in the brief is correct.

(6) Issues

The appellant's statement of the issues in the brief is correct.

(7) Grouping of Claims

Appellant's brief includes a statement that claims 1-14 stand or fall together.

(8) Claims Appealed

The copy of the appealed claims contained in the Appendix to the brief is correct.

(9) Prior Art of Record

5,317,397	ODAKA et al	5-1994
5,592,226	LEE et al	1-1997

(10) Grounds of Rejection

The following ground(s) of rejection are applicable to the appealed claims:

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 1-14 are rejected under 35 U.S.C. 103(a) as being unpatentable over Odaka (5,317,397) in view of Lee (5,592,226).

Regarding claim 1, Odaka discloses a moving picture encoding system for encoding each picture included in a sequence of moving pictures in units of a unit group (ie. GOP or Group of Pictures) comprised of a plurality of pictures including said each picture, said system comprising:

encoding control means for, when said unit group includes a plurality of different types of pictures which are to be encoded with different encoding methods (col.15, table 1; note the picture types and the different encoding modes), setting a target quantizer step size used to encode each of the different types of pictures included in said unit group (col.15, ln.46-52; Odaka discloses the quantization step size used to encode the I frame is greater than the quantization step size used to encode the P frame, and

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similarly, Odaka discloses the quantization step size used to encode the P frame is greater than the quantization step size used to encode the B frame; thus, a target quantizer step size is set to encode the different type of pictures included in said unit group), and for performing a control operation to generate and furnish a quantizer step size so that a ratio among the target quantizer step sizes set for the different picture types is a predetermined one (note figure 17, element 717 is a coding controller that generates and furnishes the quantization step size; col.15, ln.46-52 discloses the ratio is predetermined; col.23, ln.34-40 discloses the predetermined ratios of the quantization step sizes); and

encoding means for encoding said each picture included in said sequence of moving pictures including said each picture using quantizer step size furnished by said encoding control means (note figure 17, element 104, is the quantizer that uses the quantizer step size furnished by the encoding control means 717, then the data is sent to the VLC, Variable Length Coding unit) and using either said each picture or prediction from a past intra-coded image and/or a predictive coded image (note figure 17, element 708 stores the prediction image data from a past intra-coded image and/or a predictive coded image).

Although Odaka does not specifically disclose the limitation "said control operation not being totally dependent on the allocation of quantity of the target amount of codes based on the global complexity measure for each of the picture, but in accordance with features of the sequence of moving pictures". However, Lee teaches the use of measurement methods to determine relative distances between frames,

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where the HOD (Histogram of Difference) method is noted as one of the best because of its sensitivity to local motion, especially when there is no global motion between frames (col.19, lines 48-61 and col.21, line 53+). Lee teaches that the HOD method of determining local motion in between frames can be applied to a group of frames (GOP) so that bit control algorithms can be applied accordingly to adapt to the changing scene complexity between the frames in a GOP (col.20, line 39 to col.21, line 52). Also, Lee teaches that the target bit allocation for each picture type is varied accordingly to adapt to the changing scene complexity found within a sequence of moving pictures (ie. group of pictures) to be encoded (col.35, lines 20-22). In other words, Lee teaches a control scheme that takes the complexity found in the sequence of moving pictures, and adaptively allocates the proper amount of bits for encoding the sequence of moving pictures by changing to the proper quantization step size. Therefore, it would have been obvious to one of ordinary skill in the art to take the teachings of Odaka and Lee as a whole for taking into account of the complexity of the sequence of moving pictures so as to accurately, effectively and efficiently encode the sequence of moving pictures while preserving high image quality and for keeping up with today highly complex encoding standards.

Regarding claims 2-10, 13 and 14, Odaka discloses, in col. 22, lines 58 to col. 23, ln.5, that the activity or complexity, ie. spatial and temporal differences, is detected before setting the proper quantization step size for that frame type to encode. In other words, the complexity obtained from the frame data is extracted and used to help determine the proper quantization step size so that the frames can be properly

encoded. Then, Odaka discloses, in col.25, ln.18 to col.26, ln.28, that the ratios among the quantizer step sizes for the different types of pictures are updated.

With regards to claims 11 and 12, Odaka discloses, in figure 17, the use of a cyclical encoding process, a loop for recursive encoding processing where the buffer 715 is storing the amount of generated codes outputted from the variable length coding unit 712 and then the buffer 715 has an arrow to go to the coding controller (ie. encoding control means or quantization controller) where the quantization step sizes and the amount of generated codes are evaluated for determining the proper quantization step size so as to encode the different types of pictures the proper corresponding encoding methods.

(11) Response to Argument

Regarding line 12 on page 13 to line 2 on page 14 of appellant's arguments, appellant asserts that Lee fails to teach or suggest the claim 1 limitation, "encoding control means for, when said unit group includes a plurality of different types of pictures which are to be encoded with different encoding methods, setting a target quantizer step size used to encode each of the different types of pictures included in said unit group, and for performing a control operation to generate and furnish a quantizer step size so that a ratio among the target quantizer step sizes set for the different picture types is a predetermined one, said control operation not being totally depending on the allocation of quantity of the target amount of codes based on the global complexity measure for each of the picture, but in accordance with features of the sequence of moving pictures." The examiner respectfully disagrees. It is the combination of Odaka

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and Lee that is used to meet the claim 1 limitations, and the rejection of claim 1 will be elucidated below.

In col.15, table 1, Odaka clearly shows the different picture types and the different encoding modes and methods required to encode the pictures. Then, in col.15, ln.46-52; Odaka discloses the quantization step size used to encode the I frame is greater than the quantization step size used to encode the P frame, and similarly, Odaka discloses the quantization step size used to encode the P frame is greater than the quantization step size used to encode the B frame; thus, a target quantizer step size is set to encode the different type of pictures included in said unit group. Next, in Odaka's figure 17, element 717 is a coding controller that generates and furnishes the quantization step size. And in col.15, lines 46-52, Odaka discloses the ratio is predetermined, and in addition, col.23, lines 34-40 discloses the predetermined ratios of the quantization step sizes used to ensure high coding efficiency of the different picture types.

Later, the examiner states that Odaka does not disclose "said control operation not being totally depending on the allocation of quantity of the target amount of codes based on the global complexity measure for each of the picture, but in accordance with features of the sequence of moving pictures." However, Lee teaches the use of measurement methods to determine relative distances between frames, where the HOD (Histogram of Difference) method is noted as one of the best because of its sensitivity to local motion, especially when there is no global motion between frames (col.19, lines 48-61 and col.21, line 53+). Lee teaches that the HOD method of determining local

motion in between frames can be applied to a group of frames (GOP) so that bit control algorithms can be applied accordingly to adapt to the changing scene complexity between the frames in a GOP (col.20, line 39 to col.21, line 52). Also, Lee teaches that the target bit allocation for each picture type is varied accordingly to adapt to the changing scene complexity found within a sequence of moving pictures (ie. group of pictures) to be encoded (col.35, lines 20-22). In other words, Lee teaches a control scheme that takes the complexity found in the sequence of moving pictures, and adaptively allocates the proper amount of bits for encoding the sequence of moving pictures by changing to the proper quantization step size.

Regarding the first full paragraph on page 14 to page 17, the appellant argues that there is no motivation to combine the references of Odaka and Lee. The examiner respectfully disagrees. As stated before, the references of Odaka (col.2, ln.4 and fig.17 is an MPEG video encoding apparatus that applies rate control scheme with a feedback buffer) and Lee (col.2, ln.35 and figs.3 and 9 are MPEG video encoding apparatuses that apply the rate control schemes with a feedback buffer) are used in the same MPEG video encoding environment. Odaka and Lee can be cohesively applied together because they are analogous to one another since they are both in the same MPEG video encoding environment. And as previously mentioned, Lee is applied to meet the limitation, "said control operation not being totally dependent on the allocation of quantity of the target amount of codes based on the global complexity measure for each of the picture, but in accordance with features of the sequence of moving pictures".

Therefore, it would have been obvious to one of ordinary skill in the art to take the

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teachings of Odaka and Lee as a whole for taking into account of the complexity of the sequence of moving pictures so as to accurately, effectively and efficiently encode the sequence of moving pictures while preserving high image quality and for keeping up with today highly complex encoding standards.

In regards to page 17 of appellant's arguments that there is no suggestion to combine the references, the examiner recognizes that obviousness can only be established by combining or modifying the teachings of the prior art to produce the claimed invention where there is some teaching, suggestion, or motivation to do so found either in the references themselves or in the knowledge generally available to one of ordinary skill in the art. See *In re Fine*, 837 F.2d 1071, 5 USPQ2d 1596 (Fed. Cir. 1988) and *In re Jones*, 958 F.2d 347, 21 USPQ2d 1941 (Fed. Cir. 1992). In this case, it would have been obvious to one of ordinary skill in the art to take the teachings of Odaka and Lee as a whole for taking into account of the complexity of the sequence of moving pictures so as to accurately, effectively and efficiently encode the sequence of moving pictures while preserving high image quality and for keeping up with today highly complex encoding standards.

Further, on the top paragraph of page 16, appellant contends that the Lee patent discloses a custom set of frame definitions, and that the concept of Lee's frame definitions could destroy the combinability of Odaka and Lee. The examiner strongly disagrees. In column 15, lines 35-67, Odaka's Table 1 discloses the same custom set of frame definitions (ie. I, P and B pictures) as Lee has mentioned in his disclosure. Also, in Odaka's column 16, Table 2 discloses more custom set of frame definitions.

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Clearly, the aforementioned facts reinforce and strengthen the examiner's assertion of Odaka and Lee's combinability since they clearly to the same MPEG video encoding environment.

In conclusion, the combination of Odaka and Lee meets the broad limitations of the claims as meticulously disclosed above.

For the above reasons, it is believed that the rejections should be sustained.

Respectfully submitted,

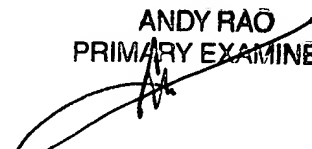
Allen Wong
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